THE

BRITISH JOURNAL

OF

CHILDREN'S DISEASES.

VOL. XII. APRIL, 1915. No. 136.

Original Articles.

THE OCULO-CARDIAC REFLEX.

By E. B. GUNSON, M.D.Edin., M.R.C.P.Lond., Temporary Lieut., R.A.M.C.,

Research Assistant, Cardiac Department, London Hospital; late Assistant Medical Officer, Grove Fever Hospital.

THE oculo-cardiac reflex is a reflex change in pulse-rate, associated in some cases with a change in rhythm following ocular compression. The path of the reflex is considered to be along the fifth cranial nerve, the medulla, and the vagus or the sympathetic nerves. Usually marked slowing of the pulse results; the path of the reflex in these cases is by the vagus, and such persons are described as vagotonics. Rarely, the slowing is very slight or an actual increase in pulse-rate results; the path of the reflex in these cases is by the sympathetic, and such persons are described as sympathicotonics.

SUMMARY OF THE LITERATURE.

Aschner (1) first described the reflex in 1908.

Miloslavitch (7) in 1910 stated that the reflex was exceptional in the normal man but habitual in vagotonics. He pointed out that the reflex was frequent in alcoholism and nervous dyspepsia.

Gautrelet (3) described a marked slowing of the pulse-rate in cases of Graves' disease, and tabulated cases illustrating the results of ocular compression in a variety of diseases. In pulmonary affections, in

rheumatism, and in alcoholism slowing of the pulse was invariably produced.

Petzetakis (9), as the result of the examination of seventy-five normal persons of all ages, states that ocular pressure produces habitually in the normal subject a variable degree of slowing, averaging five to twelve beats per minute. Pressure on the right eye produces a more marked degree of slowing than pressure on the left eye. In vagotonics greater slowing results. In sympathicotonics there is less slowing or actual quickening of the pulse-rate. The reflex is abolished gradually by atropin in from twenty to thirty minutes.

Petzetakis (10) has also recorded the production of varying grades of heart-block, including a prolonged *a*—*c* interval, dropped beats, and complete dissociation of auricles and ventricles.

Aviragnet, Dorlencourt, and Bouttier (2), investigating twenty-six cases of diphtheria, found slowing of the pulse in eleven cases, and abolition of the reflex in fifteen cases, at certain stages of the disease. They claim that the reflex may be of value in differentiating cardiac failure due to myocardial lesions from that due to nerve lesions.

Monier-Vinard and Meaux-Saint-Marc (8) state that in scarlet fever a very marked slowing results, the pulse-rate being frequently halved. The slowing was absent or very slight during the eruptive period, commenced to show itself with the phase of bradycardia, and was greatest at the time of convalescence.

Lesieur, Vernet, and Petzetakis (5) have described the state of the reflex in nervous diseases and claim that it has diagnostic value.

Guillain and Dubois (4), writing of the reflex in cases of pseudo-bulbar paralysis, state that the exact physiological conditions of the reflex are imprecise and that it is not possible to specify the nerve tracts whose integrity is necessary for the reflex.

Present Observations.

The present paper is based upon consecutive observations made with the polygraph in cases of diphtheria and scarlet fever occurring in children under twelve years of age. Observations in cases of acute rheumatism, under the care of Dr. James Mackenzie at the London Hospital, were interrupted by the outbreak of war. In them similar results of ocular compression were obtained, and changes in rate and rhythm, similar to those described below, were in these cases confirmed by the electro-cardiograph.

Method of procedure and the general effects produced by ocular compression.—The patients were all examined in bed. A preliminary

tracing was taken in order to establish a uniform pulse-rate and to obviate, as much as possible, the increase in pulse-rate set up by agitation.

Pressure on the right eye was then exercised by the thumb, through the closed upper lid. The amount of pressure used was the maximum that could be exerted without causing the patient pain. The pressure was kept up for half a minute in the majority of cases, and the pulse-rates were calculated over this period. In cases where sufficient pressure could be exerted suddenly the effect was immediate; in cases where the pressure had gradually to be increased the change was more gradual.

Effects upon the pulse.—The change in pulse-rate, usually a definite degree of slowing, lasted for the whole of the period during which pressure was exercised. In a few cases, in which the pressure was repeatedly exerted for periods of one and two minutes during a space of fifteen to twenty minutes, the reflex was not abolished. It was found in each case that the degree of slowing of the pulse obtained was proportionate to the amount of pressure. The amount of pressure permitted by different patients varied considerably, so that the comparative results are of limited value.

Changes of rhythm and conduction resulted almost exclusively in children who tolerated considerable discomfort, and were associated always with marked slowing of the pulse.

Coincident effects.—In a few cases the respiratory rate was slowed. In these cases the longest pulse-beats usually occurred during expiration, but the relationship was inconstant. In cases where the pulse was stopped for periods of three and four seconds sighing respirations developed. No other symptoms of distress or discomfort were ever noticed.

The urine was not examined. The occurrence of albuminuria, glycosuria, and polyuria have, however, been described as the result of ocular compression.(6)

Details of the Results of Ocular Compression.

(*a*) In cases of diphtheria; (*b*) in cases of scarlet fever.

(*a*) Fifty cases of diphtheria, in which the diagnosis was confirmed bacteriologically, were investigated.

Effect on the pulse-rate.—The pulse-rate remained unchanged in two cases and was increased in nine cases, the average increase being five beats per minute. Of the cases in which an increase in pulse-rate occurred five presented no abnormal physical signs, but

were highly nervous children. The four remaining cases presented the syndrome known as "cardiac paralysis." In one of these cases the increase in pulse-rate persisted for several days when the observations were discontinued, the condition of "cardiac paralysis" persisting till death. In two cases the increase in rate persisted till death. The only case which recovered gave a reduction in pulse-rate as soon as the cardiac condition had returned to normal. Some details of this case are as follows :

Boy, aged 9 years. Severe Faucial Diphtheria, "Cardiac Paralysis." Recovery.

Day of disease.	State of the heart.	Per minute. Pulse-rate before o.c.	Per minute. Pulse-rate during o.c.	Changes in rhythm and conduction.
18th	"Cardiac paralysis"	110	118	—
26th	"Cardiac paralysis"	105	112	—
38th	Normal . . .	82	64	Pauses for periods up to $2\frac{2}{5}$ secs. Frequent premature contractions. $c + a$ sequences.
83rd	Normal	88	68	

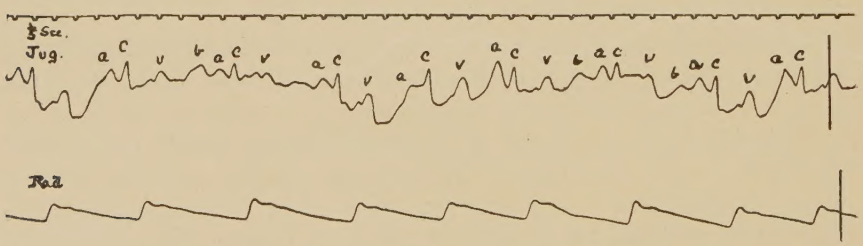

FIG. 1.—Boy, aged 6 years, mild attack of diphtheria ; 26th day of disease. Normal tracing. Rate 63 per min. a–c interval less than $\frac{1}{5}$ sec. Sinus arrhythmia.

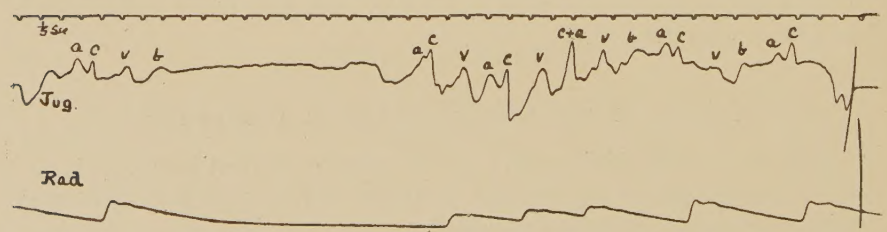

FIG. 2.—From the same patient, and taken immediately after Fig. 1, while pressure was exerted on the right eye. Shows: *a*. Marked slowing, with stoppage of the heart for $3\frac{1}{5}$ sec. *b*. Reduction in the a–c interval; that for the beat following the long pause may be attributed to "escape" of the ventricle. *c*. $c + a$ sequence; this may be due to a premature ventricular or to an atrio-ventricular premature contraction.

Constant retention in pulse-rate occurred in thirty-nine cases.

Pauses of three and four seconds' duration were recorded, and in some cases the pulse-rate was almost halved (see Figs. 2 and 4). The average reduction in pulse-rate was seventeen beats per minute, but the largest number of cases occurred in the group indicating a reduction of six to ten beats per minute.

Table of 39 *Cases of Diphtheria, showing Reduction in Pulse-rate.*

Reduction in pulse-rate in beats per minute.	1–5	6–10	11–15	16–20	21–25	26–30	31–35	36–40
Number of cases .	6	11	4	4	2	5	5	2

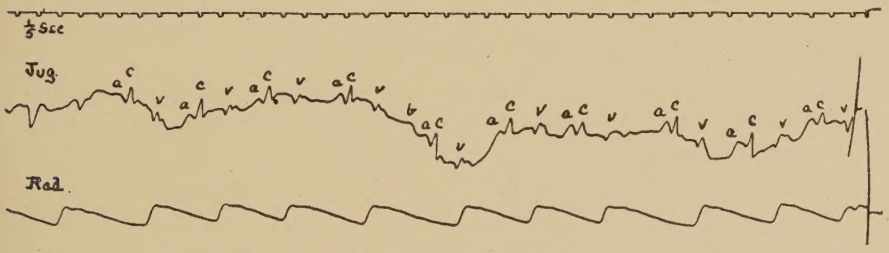

Fig. 3.—Boy, aged 3½ years, moderately severe attack of diphtheria; 23rd day of disease. Normal tracing. Rate 78 per min. *a–c* interval less than ⅕ sec. Sinus arrhythmia.

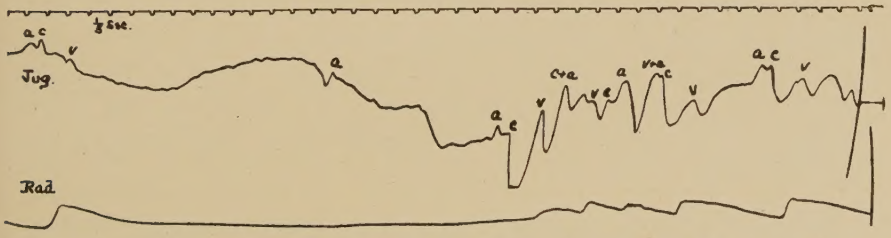

Fig. 4.—From the same patient, and taken immediately after Fig. 3, while pressure was exerted on the right eye. Shows: *a*. Stoppage of ventricles for 4⅘ sec. *b*. Dissociation of auricles and ventricles. *c*. Three premature contractions, both *a* and *c* being premature. The first is probably a premature ventricular contraction, the second an example of retrograde stimulation of auricle, the third an atrio-ventricular premature contraction.

Effect on conduction and rhythm.—The following changes occurred:

(1) Premature contraction either appeared for the first time or became more frequent in ten cases (see Fig. 4).

(2) Reduction of the *a–c* interval, in thirteen cases (see Fig. 2).

(3) *a+c* sequences in seven cases; this change may be attributed

in some cases to escape of the ventricle, in others the rhythm is probably atrio-ventricular (see Fig. 2).

(4) *c–a* sequence, in one case, the *c–a* interval being about $\frac{1}{10}$ sec. (see Fig. 4).

(5) Complete dissociation of auricles and ventricles, apparently, in two cases (see Fig. 4).

Influence of pyrexia, the nature of the attack, and the pulse-rate on the reflex.—During pyrexia slowing of the pulse was less marked, but usually present.

In toxic cases slowing of the pulse was slight or absent; increase in rate was not recorded.

In severe, non-toxic cases the reflex was abolished during the persistence of "cardiac paralysis."

In moderately severe and mild cases the reflex was apparently uninfluenced by the degree of severity, apart from the associated pyrexia.

The state of the reflex bore a very variable relationship to the pulse-rate. The reflex was most marked, however, with pulse-rates between 60 and 80 per minute.

(*b*) Twenty-five moderately severe and mild cases of scarlet fever were investigated.

Effect on the pulse-rate.—The pulse-rate was slightly increased or remained unchanged in three cases, all of which were highly nervous children.

During the eruptive period and the persistence of pyrexia, the majority of cases showed a reduction equal to about one half of that obtained during the apyrexial period; a small number, however, showed no reduction; while in one case the reduction was more marked during pyrexia than subsequently, as is illustrated by the accompanying table:

Male, aged 4 years, suffering from a Mild Attack of Scarlet Fever.

Day of disease.	Rash.	Temperature.	Per minute.		Reduction in pulse-rate.
			Pulse-rate before o.c.	Pulse-rate during o.c.	
3rd	+	100° F.	128	70	58
11th	–	98° F.	108	72	36

During the apyrexial period and after the rash had faded, twenty-two cases in which the reflex was positive gave an average reduction of seventeen beats per minute, a figure exactly comparable with that

of the diphtheria cases; likewise the largest number of cases appears in the group indicating a reduction of six to ten beats per minute.

Table of 22 Cases of Scarlet Fever, showing Reduction in Pulse-rate.

Reduction of pulse-rate in beats per minute.	1–5	6–10	11–15	16–20	21–25	26–30	31–35	36–40	41–45
Number of cases .	1	7	4	4	1	2	1	1	1

Effect on conduction and rhythm.—The changes produced in conduction and rhythm were similar to those produced in diphtheria, but were less marked. Premature contractions were less frequently induced. Dissociation of auricles and ventricles was not met with.

Significance of the Oculo-cardiac Reflex.

The oculo-cardiac reflex affords a means of acting upon the nervous mechanism of the heart in such a way as to produce all the changes in rate, rhythm, and conduction which follow vagus pressure in the neck (11).

When vagus effects are obtained, the reflex is regarded as positive, and is an indication of a normal state of the nervous mechanism of the heart. The reflex may be positive when myocardial degeneration is present and is therefore not an index of the state of the myocardium. A sympathetic effect may also be obtained by ocular compression. In these circumstances the reflex is regarded as negative. Such a negative result was obtained in all cases of diphtheria which exhibited the state of so-called "cardiac paralysis." The reflex arc, upon the integrity of which the oculo-cardiac is dependent, is too imprecise to enable definite conclusions to be drawn from the state of the reflex in all cases. Having regard, however, to the pathological findings in diphtheria and the clinical picture afforded by cases of "cardiac paralysis," the sympathicotonic effect obtained by ocular pressure in this state is most satisfactorily explained by a "transitory perturbation" of the controlling centre in the medulla, similar to the change affecting the pyramidal tract in diphtheria and other acute infections, and manifested by the presence of Babinski's sign (12).

Summary.

(1) The oculo-cardiac reflex is a reflex change in the rate of the heart, associated in some cases with a change in rhythm, following

ocular compression. The path of the reflex is considered to be along the fifth cranial nerve, the medulla, and the vagus or sympathetic.

(2) The reflex affords a simple means, under certain conditions, of acting upon the nervous mechanism of the heart in such a way as to produce all the changes in rate, rhythm, and conduction which follow vagus pressure in the neck. Under other conditions results analogous to those induced by stimulation of the sympathetic are obtained.

(3) The reflex is positive when slowing of the pulse occurs and negative when either no slowing or actual quickening results. Persons exhibiting the former state are described as vagotonics, those exhibiting the latter as sympathicotonics.

(4) The reflex is positive in normal persons.

(5) The reflex is positive in about 92 per cent. of children convalescent from diphtheria and scarlet fever. In about 8 per cent. the reflex is negative; these children are of a naturally nervous disposition. In some of the patients the reflex was negative during pyrexia.

In cases of so-called "cardiac paralysis" the reflex was negative and remained so till death, in fatal cases. In cases which recovered the reflex became positive when the heart returned to the normal state.

(6) In cases of diphtheria and scarlet fever in which the reflex was positive the following results were obtained:

(*a*) Slowing of the whole pulse, with stoppage of the heart in some cases for as long as four seconds.

(*b*) Production of premature contractions in cases in which they were previously absent and an increase in the incidence of the premature contractions when they were previously present.

(*c*) Reduction of the *a*–*c* interval.

(*d*) Production of *c* + *a* beats, due in some cases possibly to escape of the ventricle, in other cases presumably to the inception of atrio-ventricular rhythm.

(*e*) (In diphtheria patients only.) Complete dissociation of auricles and ventricles.

(7) The claim that the oculo-cardiac reflex is of diagnostic value in differentiating cardiac failure due to myocardial lesions from that due to nervous lesions presumes the independence of the muscular and nervous functions of the heart and cannot be upheld.

(8) The oculo-cardiac reflex is of slight diagnostic value in confirming the nervous origin of the great majority of the post-febrile bradycardias and in differentiating them from cases of auriculo-

ventricular heart block. As sinus arrhythmia, however, is present in nearly all cases of bradycardia due to the former cause, such confirmation is rarely necessary.

I am indebted to my former colleague, Dr. J. D. Rolleston, of the Grove Hospital, for calling my attention to the reflex and for supplying me with most of the references.

References.

(1) Aschner.—'Wien. klin. Wochenschr.,' 1908, xxi, p. 1529.
(2) Aviragnet, Dorlencourt, et Bouttier.—'Comptes rendus de la Soc. de Biol.,' 1914, lxxvi, p. 771.
(3) Gautrelet.—'Paris Médical,' 1912–13, iii, p. 583.
(4) Guillain et Dubois.—'Bull. et Mém. Soc. Méd. des Hôp. de Paris,' 1914, xxxvii, p. 584.
(5) Lesieur, Vernet, et Petzetakis.—*Ibid.*, 1914, pp. 440, 446; pp. 593, 599.
(6) *Idem.*—*Ibid.*, p. 515.
(7) Miloslavitch.—'Wien. Med. Wochenschr.,' 1910, lx, p. 3051.
(8) Monier-Vinard et Meaux-Saint-Marc.—'Bull. et Mém. Soc. Méd. des Hôp. de Paris,' 1914, xxxvii, p. 614.
(9) Petzetakis.—*Ibid.*, p. 562.
(10) *Idem.*—*Ibid.*, p. 727.
(11) Ritchie.—'Quart. Journ. of Med.,' 1912–13, vi, p. 47.
(12) Rolleston, J. D.—'Review of Neur. and Psych.,' 1910, viii, p. 404.

A CASE OF CEREBELLAR ABSCESS IN CHILD, NOT ARISING FROM EAR TROUBLE.

By Hugh T. Ashby, B.A., M.D.Cantab., M.R.C.P.Lond.,

Physician to the Manchester Children's Hospital, Pendlebury, and to the Salford Royal Hospital; Physician for Children to the Manchester Board of Guardians.

The following case is of interest, not only on account of the comparative rarity of cerebellar abscess in children, but also on account of the difficulty of the diagnosis.

The patient was a girl, aged 4 years, brought to the Manchester Children's Hospital in December, 1914, complaining of headache which had been noticed for some five weeks previously. Beyond this nothing abnormal had been observed by the parents. On admission to hospital she complained of severe headache, seemed very listless, and would not take any notice of things around her. She lay on the right side, which she continued to do throughout her illness. There was some slight bronchitis, and the pulse was slow

and irregular. The knee-jerks were sluggish on both sides, no Kernig's sign was present, but there was marked optic neuritis in both eyes. The tache cérébrale was well marked throughout the illness. The cerebro-spinal fluid was drawn off on two occasions, but was not under pressure and consisted of clear fluid with a slight excess of lymphocytes and polymorphonuclears. The urine was normal, and there had never been any ear discharge. The temperature was normal and kept so throughout the illness, till she died five weeks later.

A diagnosis of tuberculous meningitis was made, although there were points against this, such as the almost normal cerebro-spinal fluid and the normal temperature. During the course of the illness in hospital (five weeks) she remained in the same listless condition, although she brightened up at times, as frequently happens in tuberculous meningitis.

After a few days vomiting became a more prominent symptom, and for the last three to four weeks of life she vomited on an average two or three times each day. Constipation also became more marked. Kernig's sign was present on some days and absent on others, but the knee-jerks remained sluggish throughout. The pupils reacted to light and were always equal, but the optic neuritis became slowly worse.

After five weeks in hospital she had a convulsion, mostly affecting the right side, and died.

Post mortem.—The brain was of normal consistence, the ventricles were not distended, and there was a large abscess in the substance of the right cerebellum. The ears were normal, as was the rest of the body. The pus from the abscess was creamy and contained pneumococci.

The interest of this case lies in the diagnosis, which was most difficult in the absence of any ear discharge or disease. The diagnosis of tuberculous meningitis became more doubtful as the case progressed, and it became more like a cerebral tumour of some kind, but the presence of an abscess, which might possibly have been drained, was never thought of. The question is, what was the origin of the abscess, for there was no ear disease, which is by far the commonest cause of cerebral abscess. She had a transient bronchitis on admission, and in the absence of any other cause this may have been the starting point. There had been a slight vaginal discharge, but the pus from this was not examined, and it is not likely that the discharge contained pneumococci. On looking up the literature on the subject it appears that these cases do not have any marked rise of temperature,

and the temperature of this case never rose above normal during her stay in hospital.

There were but few localising signs during life, except the continual tendency to lie on the right side, and the almost right-sided convulsion. There was no nystagmus or tendency to fall to one side more than the other.

A CASE OF LIVER ABSCESS IN AN INFANT.

By C. Violet Turner, M.B.,
House Physician, Queen's Hospital for Children.

A male child, aged 5 weeks, was admitted to the Queen's Hospital for Children on November the 24th, 1914, on account of swelling of the abdomen and legs. The mother stated that the child was quite healthy at birth; when four days old he became jaundiced, and remained so for ten days. The umbilical cord separated at the end of a fortnight, and the scar was said to have healed a week later; six days before admission, however, a spot of discharge was seen on the binder. The abdomen was prominent from birth, but increased very rapidly in size five days before admission. The feet and legs had been swollen for three days. There had been no gastro-intestinal disturbance and no symptoms beyond constant screaming. The child was breast-fed from birth.

On admission the temperature was subnormal and the child vigorous. The abdomen was greatly distended, especially in the right flank, and the superficial veins of the abdominal wall were dilated. There was œdema of both legs, of the scrotum and penis, and of the lower part of the abdominal wall and back. The edge of the liver could be felt at the level of the umbilicus, and there was apparently great enlargement of the right lobe; the surface felt smooth and regular. There was no ascites, and the abdomen, except over the liver, was resonant. Physical examination showed no other abnormality.

The night after admission the temperature rose to 101° F.; the child continued to be breast-fed and did not vomit. Next morning his general condition appeared serious. The distension and œdema had increased, and the skin at various places over the abdomen and legs had become deep purple and begun to blister. The scrotum was ulcerated and the penis sloughing. The baby died soon after midday, twenty-four hours after admission.

At the post-mortem examination there was some recent plastic peritonitis but no free fluid.

The right lobe of the liver was much enlarged and slightly adherent to the abdominal wall. It contained a large abscess filled with about two ounces of thick creamy pus. The abscess was single and had a thick wall; it was shut off by fibrous tissue from the surrounding part of the liver. The rest of the liver showed cloudy swelling but no other change. There was no naked eye evidence of sepsis having tracked from the umbilicus or from the appendix. All the other organs of the abdomen and thorax were healthy.

Sections made from various parts of the liver showed that the

The liver from the visceral surface, with a rod placed across the abscess cavity.

abscess had a thick fibrous wall which contained a few chains of streptococci. In many places the vessels were plugged with emboli of streptococci, but the tissue round these emboli showed no inflammatory reaction, and there were no other actual abscesses. Cultures from the pus and heart's blood grew a *Colon bacillus* in addition to the streptococcus.

Solitary liver abscess in an infant appears to be excessively rare; very few recorded cases are to be found in the literature of the last ten years. H. D. Rolleston (5), in 1913, described a case of a baby, aged $7\frac{1}{2}$ months, in which a single abscess, the size of a pigeon's egg, was found post mortem, in the right lobe of the liver, together with broncho-pneumonia at the base of the right lung. The infection was streptococcal. Niblock (3) records a case in India of a baby, aged 11 months, with a history of diarrhœa, in which the pus from the liver was typical of a tropical abscess. Acuña (1) found a

single liver abscess in the right lobe of the liver of a child, aged 2½ years, following an attack of gastro-enteritis; the cultures from the pus were sterile, and no organisms were found in direct films.

It is probable that the abscess in the present case was due to a streptococcal infection spreading from the umbilicus to the liver. Although there was no obvious sign that this was the source of infection, it is significant that the cord did not separate for two weeks, and that a spot of discharge from the umbilicus was seen within a week of death. Williams (6) states that Keller, in 1904, believed that 20 per cent. of all deaths in the first few weeks of life were due to umbilical sepsis; there is often no outward sign of infection, but examination of the intra-abdominal part of the umbilical vessels shows that they are filled with purulent thrombi. Pflaundler and Schlossmann (4) state that the infection may spread by Wharton's jelly, which is the more frequent and benign way, or by an arteritis or phlebitis; and add that it is important to know that infection of the umbilical vessels can, and in most instances does, exist without any visible change in the umbilicus itself. The interest of this case, if the umbilical source of sepsis be accepted, is the prolonged delay in the determination of the abscess and the late fatal termination, the more common sequence of events being the formation of multiple abscesses followed by death within the first three weeks of life, as in Enrico Mensi's (2) case.

I am indebted to Dr. Eric Pritchard for kindly allowing me to publish the case.

References.

(1) Acuña, M.—'Arch. Latino. Am. de Pediat.,' 1912, v, p. 213.
(2) Mensi, E.—'Gaz. d. Osp.,' 1912, xxxiii, p. 545.
(3) Niblock, W. J.—'Indian Med. Gaz.,' 1911, xlvi, p. 137.
(4) Pflaundler and Schlossmann.—'Diseases of Children,' English translation, 1908, vol. ii, p. 38.
(5) Rolleston, H. D.—'Brit. Med. Journ.,' 1913, ii, p. 847.
(6) Williams, T. W.—'Obstetrics,' 1912, p. 355.

RETROSPECT OF OTOLOGY, 1914.

By Macleod Yearsley, F.R.C.S.,
Senior Surgeon to the Royal Ear Hospital, etc.

In the department of *Anatomy and Physiology*, two papers must be mentioned; one by Sturm ('Journ. of Laryngol.,' xxix, 193), in which he advances a new theory of hearing and states that the

ligamentum spirale contains muscle fibres and tightens the basilar membrane; and one by Shambaugh ('Annals of Otology,' xxiii, 111), on the semicircular canals and the function of equilibrium.

As usual, the literature of *Suppurative Otitis Media* and its complications is the most bulky. The most useful papers may be selected as follows: "Danger Signals in Suppuration of the Middle Ear," by Kisch ('Clinical Journ.,' xliii, 311), and "Otorrhœa," by Whale ('Practitioner,' 1914, ii, 368). An interesting case of probable injury to the jugular bulb following myringotomy in an infant, aged 10 months, is related by Page ('Annals of Otology,' xxiii, 161). In *Mastoid* surgery, Lake ('Clin. Journ.,' xliii, 705) deals with acute suppuration and its treatment, and McCaw ('N. Y. State Journal of Medicine,' xiv, 414) urges the need of more accurate knowledge in the diagnosis of mastoiditis by the general practitioner. Two interesting instances of a rare injury, parotid fistula following the mastoid operation, in a boy, aged 4 years, and a girl, aged 9 years, are recorded by Canesteo ('Annals of Otology,' xxiii, 148) and Hammond ('Boston Med. and Surg. Journ.,' clxxii, 25).

Of other *Complications,* Imperatori ('Archives of Pediatrics,' xxxi, 766) describes a case of otitic meningitis due to *Streptococcus capsulatus* in a boy, aged 7 years, and Steel ('Annals of Otology,' xxiii, 416) one of meningitis without definite symptoms, occurring late in mastoidectomy convalescence in a boy, aged 8 years. In the latter case, diagnosis was reached by the laboratory findings, clinical symptoms of meningitis appearing late. An instance of temporo-sphenoidal abscess, secondary to chronic suppurative otitis media in a boy was recorded by Ingersoll ('Cleveland Medical Journ.,' xiii, 482), and one of cerebellar abscess, in which ventricular distension was well shown in a boy, aged 13 years, by Perkins ('Annals of Otology,' xxiii, 413).

Papers dealing with non-suppurative otitis media are sparse. Beck ('Annals of Otology,' xxiii, 153) published the curious case of a girl, aged 11 years, who showed the *signe de fistule* in non-suppurative ear disease, whilst Wood discussed the naso-pharynx in oto-rhinology in a useful paper ('Practitioner,' 1914, i, 760).

In the subject of *School Hygiene and Deaf-mutism,* Grace Burton had some very welcome and sensible words to say on the deaf child and his education ('Cleveland Med. Journ.,' xiii, 123), whilst in "Child Study" (vii, 144) Macleod Yearsley dealt with the important subject of the classification of the deaf child for educational purposes. The same author has endeavoured to throw further light

on the problems of consanguinity in deaf-birth by his paper ('Lancet,' 1914, i, 167).

The most healthy sign in 1914 has been a further growth of literature on the important subject of *Prevention*. Such papers as that of Bryant ('Amer. Journ. of Med. Sci.,' cxlviii, 61) on the involution of the naso-pharynx and its clinical importance, of Holmes ('Annals of Otology,' xxiii, 138) on the epipharynx in children, and of Wishard ('Cleveland Med. Journ.,' xiii, 66) on the conservation of hearing, show the way in which otological thought is gradually tending. The prevention of deafness is attacked directly by Macleod Yearsley ('Eugenics Review,' vi, 116) in his article on the problem of deafness and its prevention, and indirectly by Black ('Journ. Amer. Med. Assoc.,' lxiii, 2126) in his remarks on prophylactic vaccination against epidemic meningitis.

Philadelphia Pediatric Society.

December the 8th, 1914, W. N. Bradley, M.D., President.

Progressive Muscular Atrophy.—Dr. R. L. Engle showed a girl, aged 13 years, with progressive muscular atrophy of the Aran-Duchenne type. Illness began seven years ago, following whooping cough. Over a period of six months there developed stiffness in the left leg, lameness and indefinite pain. The finer movements of the hands became awkward and clumsy. Three years later contractures of the hands and right foot were first observed. The condition had not progressed since, but for the past year she had complained of general weakness and poor appetite. There had been no other symptoms. She showed marked emaciation, exaggerated supra- and infra-clavicular fossæ, active abdominal reflexes, diminished deep reflexes of upper extremities, active knee-jerks, and diminished right tendo Achillis reflex. All cranial nerves were intact; no sensory disturbances. On both hands there was marked atrophy of the smaller muscles, of the flexors and extensors of the forearm, arm, and the shoulder. There was similar atrophy of the leg and foot muscles, but those of the thigh were best preserved. Muscular twitchings were only visible after irritation. There was marked weakness of the muscles of the extremities, the patient, to rise from the floor, turning over on hands and knees, and climbing up on herself. Electrical examination showed partial reaction of degeneration.

Newer Views on the Subject of Tonsils and Adenoids.

The Relations of the Tonsils to Tuberculosis.—Dr. H. R. M. Landis said that, in dealing with children, it was important to remember that we had to do with an age period in which all lymphoid tissue was in excess as judged by adult standards. This was true of all lymph nodes throughout the body. Failure to recognise this fact had led some observers to base a diagnosis of tuberculosis on palpable cervical lymph nodes alone. Had they

examined other groups of superficial lymph nodes, the same enlargement would have been noted. Dr. Landis found superficial lymph nodes readily palpable in all children between two and twelve years, irrespective of social condition. By adolescence, lymph nodes were only palpable as the result of local or general disease. The tonsils were subject to the same evolution. Simple hypertrophy of the tonsil was no good reason for its removal.

In regard to the relationship between tonsils and tuberculosis, we had three factors to consider: (1) The *rôle* played by the tonsil as a portal of entry, (2) primary tuberculosis of the tonsil, and (3) secondary tuberculosis of the tonsil.

(1) To establish the first fact was far from easy. While occasionally tubercle bacilli passed through the tonsils and set up tuberculosis of the cervical lymph nodes, tuberculosis of the nodes was not always produced in this way. Inflammatory swelling of the cervical nodes might arise from eczema, carious teeth, and other processes of other structures within the buccal and pharyngeal cavities. Thus, the source of infection of the cervical lymph nodes was multiple and not single. Besides, tuberculosis was manifest in a severe form and at an earlier age in the bronchial lymph nodes than in the cervical. Granting that the tonsil might afford an easy means of entrance for the tubercle bacillus, its removal did not entirely free the child from danger, inasmuch as there still remained much lymphoid tissue which was drained by the cervical lymphatic system. Many tonsillotomies were partial, and the portion left might still be vulnerable for the tubercle bacillus, just as it was for organisms producing acute inflammation.

(2) As the result of microscopic examination of tonsils, primary tuberculosis was said to occur in about 5 per cent. of cases in which the tonsil was hypertrophied. In the majority of instances this was an accidental finding. Primary localisation in the tonsil was not common, as borne out by inoculation experiments, which proved that tubercle bacilli might pass through the tonsil without causing damage and infect the lymph nodes.

(3) By far the commonest form of tuberculosis of the tonsil occurred secondarily to advanced pulmonary and laryngeal lesions. It might manifest itself as extensive ulceration of the tonsil itself with extension to the pillars, uvula, and adjoining parts. In most advanced cases, the tonsils showed no visible change, but if examined microscopically, the great majority showed tuberculous changes. In these cases the tonsils were subjected to an overwhelming infection, and the resistance of the individuals had been tremendously reduced.

The question how the tubercle bacillus gained access to the lungs remained shrouded in mystery. The tendency was now again towards the inhalation theory. Dr. Landis admitted that the tonsils might be one of the portals of entry but was not willing to grant that they played this *rôle* except in a very small percentage of cases. Nor did he believe that removal of the tonsils in children with a tuberculous parentage or children in the so-called pre-tuberculous stage was indicated, unless the tonsil was obviously and unmistakably diseased.

Infection through the Tonsils.—Dr. G. B. Wood, by invitation, read this paper. He said that the question of tonsillar infection was yet in such an unsettled state that in a large number of cases, the operation of removal of the faucial and pharyngeal tonsils was done with the hope that the patient would be benefited, but without absolute knowledge that the tonsils were the cause of general infection. Because of the impossibility to determine

absolutely whether the tonsil was at fault, a cry of horror has been raised at the " massacre of the tonsils." They had accumulated sufficient experimental and clinical data to make a plausible appeal for their contentions. Henke, a recent defender of the tonsils, had published in the 'Archiv f. Laryngologie u. Rhinologie,' for 1914, his results of a series of cases. He had injected pigment into the nasal mucosa and gums of animals and human beings and found a certain amount of it in their tonsils. He deduced from this that the tonsillar tissues of the throat had the function of eliminating toxins from the general lymphatic system. In a later number of the Archiv appeared a paper by Amersbach, who carried out a similar series of experiments, but with more careful attention to his technique. His results were absolutely opposed to those of Henke, and controverted the theory that the tonsils were organs of elimination. This accords with our previous knowledge. The facts which lead us to believe that the tonsils are at times a source of cryptogenic infection, were: (1) the anatomy of the epithelium was such that we had a lessened barrier, as far as mechanical defence was concerned. From the beginning there was a peculiar disintegration of the basal cells of the cryptal epithelium, causing distinct lessening in its continuity and the absence of a basement membrane and subepithelial layer of connective tissue. (2) The clinical study of a large number of cases of tonsillitis and its relation to general infection had demonstrated that certain organisms attacked first the tonsils and might later be found in the blood and other organs; also that in some chronic cases of general toxæmia the condition cleared up rapidly after the removal of the tonsils. (3) The pathologic study of acute tonsillitis showed that the attack was first against the epithelium of the crypts. The ordinary pyogenic organisms gained entrance to the parenchyma of the tonsil, producing typical symptoms of acute suppurative tonsillitis only after the feeble barrier of the cryptal epithelium had been destroyed. (4) It had been shown experimentally that in the tonsils of the hog the tubercle bacilli would pass unaltered through the epithelium of the crypts and enter the interfollicular tissues and be taken up by the efferent lymphatics and carried to the regionary lymph nodes before damage to the tonsillar tissues had taken place. Further that while infection of the tonsillar tissues of the hog was extremely easy, a simultaneous infection of other portions of the mucosa of the mouth and pharynx practically never happened. Dr. Wood believed that we were justified in drawing the conclusion that the tonsillar structure of the throat was more easily penetrated by bacteria than were other portions of the mucous membrane of the upper respiratory tract.

The Indications for the Removal of Tonsils and Adenoids.—Dr. F. R. Packard pointed out that the indications for removal of the tonsils differed from the indications for removal of adenoid growths in the naso-pharynx. He detailed the different indications for each, pointing out that Meyer's original article describing naso-pharyngeal adenoid growths practically covered all the indications for their removal. In regard to the indications for removing tonsils, formerly hypertrophy was regarded as the sole indication; but at present, their *rôle* as portals of infection had led to more operations being indicated on that account than for any other single indication. He referred briefly to the infections following disease of the faucial tonsils. There were practically no contra-indications to removal of the tonsils, aside from the dangers attached to the operative procedure employed.

The Relation of the Lymphoid Tissue of the Upper Air-passages to the Voice.—Dr. G. H. Makuen, by invitation, read this paper. While the lymphoid tissue of the upper respiratory tract resembled that found elsewhere, there were marked structural differences in the distinctive portions of the tissue itself. It was always present in close approximation to some of the most important vocal organs. This tissue varied during the life of the individual, and physiological conditions were often mistaken for pathological and treated accordingly. Voice, a vehicle for expressing thought and feeling, was essential to psychological as well as physiological development. The lymphoid tissue of the upper respiratory tract might affect the voice in three ways, through its action as a lubricant to the pharynx, through its influence upon the action of the muscles employed in phonation, and through its effect upon the resonance chambers of the voice. Normal lymphoid tissue lubricated the pharynx, while abnormal lymphoid tissue either failed to lubricate or lubricated it too much. The muscles chiefly influenced were the palatopharyngei, palatoglossi and superior constrictor muscles, and all the resonance chambers of the voice were affected by it. Large adenoids and tonsils interfered with the development of the facial bones and the alveolar arches, and by their effect on respiration and phonation also interfered with the development of the pharyngeal, laryngeal, and thoracic cavities, materially altering the size, shape, and contents of all the resonance chambers of the voice. Degenerated tonsils injured the voice by causing congestion and hypertrophy of adjacent membranes and muscles, interfering with normal action. Lymphatic tissue prejudicial to the voice was also prejudicial to the general health of the individual and there was a dual reason, therefore, for trying to restore it to normal. From the vocalist's standpoint, operative measures were always a misfortune, because a tonsil requiring operation was always hypertrophied or degenerated, either condition being deleterious to the voice; and it was doubtful whether after any operation the tonsils were ever normal. While the chief reason for operating was to conserve the individual's general health, it was no less important to conserve or improve the patient's voice. Every child should be regarded as a possible singer and the conservation and development of its vocal organs must always be carefully considered. In childhood the voice was easily injured as the vocal organs were growing and developing. Congestion of the pharynx or acute tonsillitis was not enough reason to remove the tonsil; for the cause might be in some remote part of the body. The less radical the operation, the less liability would there be of injury to the voice. Hence the desirability of conservatism. Normal lymphoid tissue was beneficial to the voice; but abnormal lymphoid tissue harmed the voice. Operative measures which were beneficial to the general health might be decidedly injurious to the voice. An extra-capsular tonsillectomised pharynx was always a damaged pharynx and the operation should only be done when the damage to the pharynx and to the individual threatened to become greater by leaving it undone.

Abstracts from Current Literature.

Medicine.

The incidence of tuberculosis in childhood (*'Journ. State Med.,'* 1914, xxii, *p.* 705).—**G. Sims Woodhead** discusses bovine tuberculosis in relation to tuberculosis in the child. He thinks that although milk is not the main carrier of the tubercle bacillus to the human subject, it still must account for a fair percentage of the cases of tuberculosis that occur amongst children, and probably for a certain but smaller percentage of adult cases. In his opinion bovine tuberculosis may account for but a proportion of the cases of tuberculosis that find their way into the Registrar-General's returns, but it must be seriously studied and carefully reckoned with, in that it attacks children during their period of development and growth, interfering, both directly and indirectly, with their nutrition, killing some of them and protecting a few perhaps, but rendering others more susceptible to infection by the human bacillus. There appears to be little or no danger of our minimizing the importance of the action of the human bacillus, at present, at any rate; but unless the knowledge already acquired concerning the bovine bacillus is widely diffused, there is, undoubtedly, a serious danger that the importance of this organism, as an agent in the production of tuberculosis, may be minimized, and, in certain quarters, overlooked.

J. Allan.

The incidence of tuberculosis in childhood (*'Journ. State Med.,'* 1915, xxiii, *p.* 1).—**A. P. Mitchell** recently carried out a bacteriological study of tuberculosis of the lymph-glands in children, from which he thinks the following conclusions justified. (1) The results of inoculation with autopsy material, on account of the small number of cases investigated, cannot be considered conclusive as to the relative frequency of the bovine and human types of infection. But, so far as they go, they furnish evidence that in cases of fatal tuberculosis in children the human bacillus is the main contributor to the mortality rate. (2) Having demonstrated that a considerable proportion of the tuberculosis affecting children in Edinburgh and district is of bovine origin, more particularly that which affects primarily the mesenteric and cervical glands; that the milk supply of the same areas is frequently infected with bovine tubercle bacilli; and having demonstrated that a certain number of deaths occur from this bacillus, he is of opinion that bovine tuberculosis can no longer be considered a negligible factor in respect to the spread of tuberculosis amongst children, more especially since unsterilized cow's milk in Scotland is a vehicle by which tubercle bacilli must very frequently be introduced into the bodies of children. In short, he maintains that the campaign against tuberculosis must include the bovine sources. (3) It is to be hoped that the high degree of tuberculosis contamination which he has found in the Edinburgh milk supply may prove an effective argument for those who are striving with our legislators in the cause of pure milk.

J. Allan.

The incidence of pulmonary tuberculosis in children (*'Liverpool Med.-Chir. Journ.,'* 1914, xxxiv, *p.* 333).—**S. W. M'Lellan** considers that the various specific methods for distinguishing active and passive disease are unreliable, that tubercular infection in children is very frequent, but

active disease not so common; disease of the lungs is secondary to disease of the thoracic glands, and is very fatal; mere enlargement of these glands is no proof they are tubercular, and fibroid pneumonic and bronchiectatic conditions are frequently mistaken for phthisis, and are more common in children than is generally supposed. F. R. B. Atkinson.

Early pulmonary tuberculosis in childhood (*'Brit. Journ. of Tuberculosis,'* 1915, ix, *p.* 1).—**K. Fraser** has analysed 300 cases of pulmonary tuberculosis in children in the elementary schools in Cumberland, and comes to the following conclusions. (1) The commencement of school life has a prejudicial effect on children predisposed to pulmonary tuberculosis. (2) Inadequate increase of weight is very conspicuous. (3) Defective nutrition is probably the earliest indication of a tuberculous infection. (4) Night sweating is only significant when the sweats are heavy. (5) A persistent hard dry cough is the most conspicuous type of cough. (6) In nearly every case one or other apex is affected, and the right apex is most often the first recognisable focus. (7) Dulness is almost always present over the affected lung. (8) Inequality of the breath-sounds is a very early indication of trouble; the duration of this is short, and it is usually succeeded by bronchial breathing. (9) Friction and fine crepitations are the most significant accompaniments, and all accompaniments when persistent, and especially if localised, are suspicious. (10) Spontaneous improvement is more common in girls than boys; from the sixth year the tendency to spontaneous improvement increases year by year. Children in rural areas show a very much greater tendency to spontaneous improvement than children in urban areas. F. R. B. Atkinson.

Tuberculosis in children (*'Brit. Journ. Tuberculosis,'* 1914, viii, *p.* 151).—**E. Carling** rightly draws attention to the necessity of educational advantages existing in a sanatorium for children, and sees no objection to the presence of adults and children in one sanatorium.
F. R. B. Atkinson.

Tuberculosis in children (*'Boston Med. and Surg. Journ.,'* 1914, clxxi, *p.* 454).—**R. N. Smith** considers that D'Espine's sign, viz. extension of whispered bronchophony, is not a reliable sign of enlarged bronchial glands unless it be extended to the second thoracic vertebra. The paper otherwise covers old ground. F. R. B. Atkinson.

Tuberculous infection in young children, with special reference to its occurrence in cases of malnutrition (*'Journ. State Med.,'* 1915, xxiii, *p.* 21).—**W. A. B. Young** made an inquiry into this subject, and the methods of investigation included (1) clinical observations; (2) post-mortem examinations; (3) examinations of post-mortem material in the laboratory. Among 113 cases of malnutrition under clinical observation in whom no ordinary clinical evidence of tuberculosis could be discovered, 31 gave a skin-reaction to tuberculin, 77 did not react, and in 5 cases the results were doubtful. No child under three months gave a reaction, only one under six months, and among 93 under two years 19 reacted. These were all children in whom there was no sign, symptom, nor history of tuberculosis. Of 40 cases examined post-mortem, 27 were cases of children dying of malnutrition, diagnosed as such clinically. Tuberculosis was found in 4 cases—or 14·8 per cent.—all under $1\frac{7}{12}$ years of age. From a morbid anatomy

point of view there was no case of latent infection amongst these 27 cases, and in each of the four cases tuberculosis was the cause of death. Two cases of concealed tuberculous infection were found among these 40 cases.

J. Allan.

The diagnosis of tuberculosis in early life (*'Am. Journ. Med. Sci.,'* 1914, cxlviii, *p.* 530).—**H. R. M. Landis** and **I. Kauffmann** consider the chronic form of pulmonary tuberculosis only, and lay stress on the difficulty in diagnosis, as the symptoms and signs present in adults are apt to be absent in children. Exaggeration of the breath-sounds is constant in children, and gives rise to the puerile form of breathing. They do not believe in the alleged percussion changes as a sign of enlarged bronchial glands. Von Pirquet's test is valuable under two years of age, but the older the child the more unreliable the test. The sociological conditions of each child should be considered and endeavour should be made to determine whether he is physiologically normal as far as his surroundings are concerned.

F. R. B. Atkinson.

Diagnosis and treatment of tuberculosis in children (*'Boston Med. and Surg. Journ.,'* 1914, clxxi, *p.* 452).—**W. C. Bailey** recommends the following procedure for distinguishing between infection and disease. Inquire carefully as to the presence of an infecting case in a family; then try von Pirquet's test, and, if positive, make a physical examination. If active disease be found, treat in a sanatorium or special out-door school. If the test be negative with a history of contact, keep the child on the list of suspects, if possible place him in an out-door school and repeat the test at intervals. If there be a negative history of contact and negative examination, but a positive von Pirquet, the procedure should be the same as above.

F. R. B. Atkinson.

Röntgen ray in tuberculosis of children (*'Boston Med. and Surg. Journ.,'* 1914, clxxi, *p.* 453).—**W. J. Dodd** does not think a definite diagnosis should be made by this means until positive clinical evidence is obtained.

F. R. B. Atkinson.

Report on the infection of children with the bovine tubercle bacillus (*'Brit. Med. Journ.,'* 1914, i, *p.* 125).—**A. P. Mitchell. Report on tuberculous milk in Edinburgh** (*Ibid.*, ii, *p.* 71).—**A. P. Mitchell. A bacteriological study of tuberculosis of the lymph glands in children** (*'Edin. Med. Journ.,'* 1914, xiii, *p.* 209).—**A. P. Mitchell.**—These three papers may be considered together. An examination of seventy-two cases of tuberculous cervical glands in children showed that 90 per cent. were due to bovine tubercle bacilli in cow's milk, the obvious precaution being therefore to sterilize the milk. The faucial tonsils were found in fifty-one out of the seventy-two cases to be first affected with tubercle, and these infected the glands. In the milk supply of Edinburgh tubercle bacilli were found in 20 per cent. of the samples examined. The last paper brings the number of cases to eighty, the bovine bacillus was present in seventy-one instances (88 per cent.) and the human bacillus in nine (12 per cent.).

F. R. B. Atkinson.

The milk supply as a causal factor in relation to tuberculosis (*'Journ. State Med.,'* 1914, xxii, *pp.* 671 and 718).—**Sheridan Delépine** gives a general account of the observations and arguments which have been

used for and against the view that the milk supply bears a causal relation to tuberculosis. The matter is reviewed under the following heads—(1) General remarks and early experimental evidence; (2) evidence based upon age incidence, distribution of lesions, and history of cases; (3) evidence based upon the pathogenic activity, the cultural characters, and the properties of the bacilli isolated from tuberculous lesions; (4) evidence based upon the effects which a reduction in the amount of tuberculous milk supplied to a community has upon the infantile mortality from tuberculosis. It is concluded that although there is not complete agreement in the results obtained by various observers as to the exact amount of human tuberculosis attributable to the consumption of tuberculous cows' milk, there is clear and cumulative evidence that cows' milk plays a very important part in the production of infantile tuberculosis in England and Scotland.

J. Allan.

The relation of bovine tuberculosis to early tuberculosis in children (*'Am. Journ. Dis. Child.,'* 1914, viii, *p.* 210).—**T. C. McCleave** considers that milk brought to just below the boiling-point will never transmit bovine tuberculosis, and that all milk should be pasteurised.

F. R. B. Atkinson.

The absorption of fat from the intestinal tract of the actively tuberculous child (*'Am. Journ. Dis. Child.,'* 1914, viii, *p.* 235).—**F. W. Schlutz** finds as a result of the examination of fifteen cases that fat-absorption in most of the common forms of tuberculosis is practically normal, and is likely to be diminished early in cases with extensive glandular and lymphatic involvement. The presence of the exudative condition does not influence fat-absorption. A diet which insures the largest amount of fat-deposit in the tissue, with the least detention of water, is the one most beneficial to the tuberculous child.

F. R. B. Atkinson.

Tuberculosis of the bronchial glands and lung hilus (*'Amer. Journ. Med. Sci.,'* 1914, cxlviii, *p.* 369).—**H. F. Stoll** and **A. C. Heublein** record illustrative cases and arrive at the following conclusions: (1) Prior to the fifteenth year tuberculosis of the bronchial glands and lung hilus is the commonest form of tuberculous disease. (2) The early symptoms are usually indefinite and chiefly of toxic origin. Cough is generally present, but may be entirely absent, even with advanced disease of the bronchial glands. (3) Although the orthodox signs of incipient apical tuberculosis are not present in these cases, certain physical signs indicate a pathological process at the lung root. (4) The significant signs are a "hilus dimple" (noted anteriorly, over the hilus region at the end of inspiration), dilated veins, parasternal and paravertebral dulness, and, most significant of all, a well-marked, whispered bronchophony in the interscapular region (D'Espine's sign). (5) Radiography, and especially stereo-radiography, is most valuable in these cases (*cf.* British Journal of Children's Diseases, 1913, x, p. 179).

J. D. Rolleston.

The healing process of the infantile bronchial glands in tuberculosis (*'Journ. State Med.,'* 1915, xxiii, *p.* 7).—**E. Rist** discusses what becomes of the tuberculous bronchial glands of children who recover, and what changes take place in them, and he shows that, microscopically as well as macroscopically, the bronchial glands of the tuberculous adult are absolutely different from the bronchial glands of the tuberculous child.

The comparative study of glands at different stages of the healing process shows how the scar-formation is gradually completed; from the peripheral fibroid tissue, which lines the central caseous mass, bundles penetrate into this mass, which finally gives the colouring reactions characteristic of collagenous substance. These bundles are not exactly like connective bundles; they are less precisely limited and fibrillated; neither cellular elements nor elastic fibres can be found in their midst. It can hardly be said that there is a real sclerotic transformation of the gland; it might more accurately be called a hyaline degeneration. During this healing process, which, of course, requires a long time in each individual case, the tubercular follicular formations, which are a characteristic feature of the peripheral fibroid part of the caseous gland, gradually disappear. It is not correct to assume that those glands, in consequence of the healing-up process of infantile pulmonary tuberculosis, have lost their function, have become sclerotic throughout, and utterly unable to react. Indeed, they react normally to any disease, except tuberculosis. The author thinks that it would be near the truth to assume that caseation of the bronchial glands is not a specific character of childhood, but of primary tuberculous infection. If, on the other hand, pulmonary tuberculosis of the adult is, as a rule, not accompanied by caseation of the corresponding bronchial glands, it is not because the lymph-glands of the adult are essentially and physiologically different from those of the child, but simply because pulmonary tuberculosis of the adult is due to a re-infection. J. Allan.

Bronchogenous, placentogenous, dermatogenous, and enterogenous infection with tuberculosis in infancy (*'Journ. State Med.,'* 1915, xxiii, *p.* 16).—**C. von Pirquet** submits that for the first year of life the bronchogenous infection with tuberculosis is by far the most frequent way of entry (about 95 per cent. of all infections). The enterogenous infection is not important, at least not in Austria (1 to 2 per cent. of all infections). A placentogenous infection of the fœtus is a rarity, as are also stomatogenous and dermatogenous infections. Prophylaxis of infant tuberculosis has chiefly to deal with the separation of the nursling from the coughing adults. J. Allan.

The association of erythema nodosum and tuberculosis (*'Journ. Amer. Med. Assoc.,'* 1914, lxiii, *p.* 1266).—**O. H. Foerster** reviews the literature on the association of erythema nodosum with tuberculosis, and reports the cases of two sisters, both of whom developed erythema nodosum and cervical adenitis after measles. One subsequently presented tuberculous lesions of the skin, and died from tuberculous meningitis, while the other was presumably tuberculous, but was not definitely proved to be so. T. R. Whipham.

The study of the major varieties of bone and joint tuberculosis in children (*'Journ. State Med.,'* 1915, xxiii, *p.* 12).—**John Fraser** deals specifically with two of the major forms of bone and joint tuberculosis, Pott's disease and hip joint disease, and his remarks apply directly to cases under treatment in Edinburgh. Three points may be noted. The first is the extraordinary prevalence of these serious major forms of bone and joint tuberculosis. The second is a consideration of the burden which has to be borne by the parents of children suffering from these diseases. The third point is one in regard to the difficulty of treating these cases with the

facilities which are at one's command. The ideal course for dealing with cases of this nature is to remove the invalid to a home specially adapted for his treatment. J. Allan.

A case of acute general tuberculosis in an infant aged 3 months (*'Lyon Méd.,'* 1914, cxxii, *p.* 1441.)—**Péhu** and **Mouret.**—Both parents were in excellent health. A few days after parturition the mother had a febrile attack for which she was received into a maternity hospital for about three weeks. Her bed was beside that of a tuberculous patient with pulmonary cavities, who coughed and expectorated freely. As the infant was only breast-fed by its mother and by sterilised milk, the conclusion inevitably follows that during the short space of three weeks the infant was contaminated by inhalation. Examples of tuberculosis during the first three months of life are rare, and fall into three groups: (1) Those which occur under special morbid conditions; the mother being affected with severe tuberculosis there is passage of the bacillus itself through the placenta to the fœtus, which is born with congenital tuberculosis. Cases of this kind are very rare, only fifty-one having been recorded (see *'Arch. de Méd. des Enf.,'* 1908, xi, *p.* 1). (2) To establish in a scientific manner the reality of congenital tuberculosis it is indispensable that the infant should be separated from the mother from its birth. If this precaution is not taken the infant may have been infected by the mother's sputa. (3) This group includes all the cases of infants born of healthy parents and infected by contact with tuberculous people with whom they are placed.

Vincent Dickinson.

A culture of B. tuberculosis from the blood, post mortem, of a case of miliary tuberculosis (*'Journ. Amer. Med. Assoc.,'* 1914, lxiii, *p.* 1656).—**H. K. Faber** states that the cultivation of the tubercle bacillus from human blood has hitherto been unsuccessful owing to the difficulty in obtaining complete aerobiosis, a carefully regulated temperature, carefully titrated media and proper moisture. Of twenty-one cases of miliary tuberculosis examined at the Babies' Hospital, New York, only one was positive. The patient, from whom the culture was obtained, was a boy, aged $2\frac{1}{2}$ years, whose tuberculous infection dated back about two months, and was the sequel of an attack of whooping-cough. The diagnosis of tuberculosis was made during life and corroborated at necropsy. Cheesy bronchial lymph nodes, extensive caseous change, with a cavity in an area of old broncho-pneumonia in the left upper lobe, tuberculous ulcers in the intestine, and miliary tuberculosis of the lungs, spleen, liver, and kidneys, were the principal pathological findings. Blood was taken for culture in the following manner: After opening the thorax, the pericardium was slit with scissors and the edges folded back. An area of about 2 × 2 cm. over the right ventricle was carefully seared with a red-hot knife. The knife was again heated and immediately plunged into the heart-cavity. A sterile pipette was introduced into the opening and a little over 1 c.c. of fluid blood was withdrawn and transferred directly to a plain agar slant. The tube was laid so that the blood covered the surface and, when the necropsy was completed, sealed with paraffin and laid in a similar position in the incubator. This culture remained apparently sterile, but with others of the series was examined microscopically once or twice a week. The contents of the tube were scraped with the platinum loop and partly redistributed over the surface. This not only gave access of air to the bacilli present, but

probably formed a layer of serum on the agar surface in which the bacilli could multiply. After two weeks two or three acid-fast rods were seen, and after a month a clump of about twenty organisms was found. Transplants on to egg-broth medium showed apparently genuine tubercle bacilli, and inoculation of a month old culture, of the third generation, into guinea-pigs produced typical tuberculous lesions. From the spleens of these animals acid-fast bacilli, resembling in all respects genuine tubercle bacilli, were obtained.

T. R. Whipham.

Recurrent bronchitis in children (*'Arch. of Ped.,'* 1914, xxxi, *p.* 711, and *'New York State Journ. Med.,'* 1914, xiv, *p.* 485).—**C. G. Kerley** defines recurrent bronchitis as including those cases of illness in which there are attacks of bronchitis with severe cough, often with bronchial spasm. A small proportion of the cases suffer from true asthma. Food intoxication is the important ætiological factor—these children have far too much sugar and carbohydrate foods. The recurrent bronchitic patients should be cut off from sugar largely—entirely if the case promises to be difficult. Cow's milk is omitted entirely if the case is obstinate, but skim milk is allowed. The carbohydrates and fats found in vegetables, cereals, bread-stuffs, and meat supply all the heat and energy required. Suitable clothing of medium weight should be worn. The child should have a warm bath at bed time, followed by a vigorous rubbing and sometimes massage. Inasmuch as the so-called lithæmic type is the individual most frequently affected it is well to give such children interval treatment with sodium bicarbonate or sodium salicylate. If habitual constipation is present a free daily evacuation of the bowels is insured by suitable treatment. Clinical notes of several cases are appended.

J. Allan.

Primary pulmonary actinomycosis in a child (*'Amer. Journ. Dis. Child.,'* 1914, viii, *p.* 113).—**F. Huber** and **S. Berkowitz.**—A boy, aged 10 years, employed in a stable, received a severe blow on the chest; two weeks later he was suddenly seized with high fever, headache, and vomiting. On the following day an unproductive cough developed, followed by brownish expectoration, which later became greenish and fœtid. On admission to hospital four weeks after the injury there was much dyspnœa, prostration, and pallor. Extensive labial herpes was present. The movements of the right chest wall were much diminished, and percussion gave a "boardy" note, which was diminished from above downwards. The breath-sounds were distant and bronchial in character. Fine and large moist *râles* accompanied the breath-sounds. Examination of the sputum showed strepto- and staphylococci, but no ray fungi. Thoracotomy was performed and a pint of thick pus was evacuated. Death from exhaustion occurred a week later. The necropsy showed a solid right upper lobe, which was almost gangrenous on section, and honeycombed with abscesses containing yellowish-green pus. The pleura was thickened and covered with fresh fibrin. The lower lobe was studded with patches of broncho-pneumonia. The remainder of the lung was solid with reddish-grey hepatisation. The left lung was covered with a thin layer of fibrin, and a section showed numerous patches of red hepatisation. Microscopically the pulmonary alveoli were filled with exudate consisting partly of pure fibrin and partly of fibrin and large mononuclear cells. Scattered through the consolidated lung were collections of small round cells, in the centre of which there were from one to a dozen ray fungi. The exudate surrounding them was completely necrotic.

J. D. Rolleston.

Some manifestations of influenza in young children (*'New York State Journ. Med.,'* 1914, XIV, *p.* 479).—**L. Emmett Holt** protests against the promiscuous use of the term influenza, which means an infection or inflammation due to Pfeiffer's bacillus. The diagnosis of influenza should only be established by finding the organism in the secretions, but a diagnosis by the examination of smears is unreliable. Only cultures can be depended upon. Several definite clinical types may be noted. (1) Pneumonias with unusual, often extraordinary, fluctuations of temperature or with a persistence of temperature after physical signs have disappeared. (2) Pneumonias running a protracted course, with slow resolution. Frequently there are recurrent attacks. (3) Cases of otitis with very mild catarrhal symptoms, often only a moderate cough, and a few coarse râles in the chest, but with a temperature quite out of proportion to the general or local symptoms. (4) Cases with very few or no catarrhal symptoms whatever, but with a very unusual temperature curve. (5) Unusual temperature curves accompanying tuberculosis and sometimes other diseases. (6) Cases resembling whooping-cough, seen chiefly in older children, seldom in infants. In this last group the author has found a differential leucocyte count of great value in diagnosis. J. Allan.

A case of abscess of the lung or the interlobar tissue evacuated through the bronchi cured by artificial pneumothorax (*'Gaz. Hebd. des Sc. Méd. de Bordeaux,'* 1914, XXXV, *p.* 303).—**G. Leuret** and **Aubert.**—The patient was a girl, aged 15½ years, who had suffered from diphtheria followed by bronchopneumonia. Owing to repeated serious hæmorrhages occurring with the expectoration of large quantities of purulent matter and a continuous aggravation of the patient's condition, artificial pneumothorax was performed with complete success. F. R. B. Atkinson.

Some thoughts on the atypical pneumonias of infancy and childhood (*'New York State Journ. Med.,'* 1914, XIV, *p.* 437).—**Edward J. Wynkoop** in this paper does not go into all the symptoms that might occur in any unusual form of pneumonia, but emphasises two symptoms, vomiting and abdominal pain, that are sometimes present, but when present in pronounced form often lead to mistakes in diagnosis. This is especially true in the atypical varieties of the disease. The significance of these two symptoms is carefully discussed, and the author points out that too much emphasis cannot be placed on a careful, accurate, painstaking physical examination. J. Allan.

A lobar form of broncho-pneumonia of long duration occurring in children and young adults (*'Am. Journ. Med. Sci.,'* 1913, CXLVI, *p.* 313).—**D. Riesman** describes seven cases of continued fever, lasting from several weeks to three or four months, occurring in persons between the ages of ten and twenty-eight, and characterised by impaired resonance, extending over the lower lobe of one lung, usually the left. From the base to the middle or the angle of the scapula *râles* are abundant, consonanting, and chiefly moist, but a few are dry. They are heard best in inspiration, and are often increased by coughing. The onset is gradual and the fever moderate, the temperature rarely rising above 101° F. The disease was not associated with influenza, whooping-cough, pulmonary tuberculosis, or heart disease. Pneumococci occurred chiefly in the sputum. It is not an interstitial pneumonia, as recovery occurs without retraction. It is a confluent lobular pneumonia of lobar distribution. Christopher Rolleston.

Two cases of the appendicular form of pneumonia with expulsion of an ascaris (*'Arch. de Méd. des Enf.,'* 1914, xvii, *p.* 607).—**M. Lassalle** describes two cases of pneumonia in boys, aged 10 and 11 years, in whom also signs of appendicitis were manifested a few days after the pneumonia had occurred. The former completely cleared up after an ascaris had been vomited. F. R. B. Atkinson.

Pulmonary sclerosis in children (*'Gazz. internaz. di Med., Chir., etc.,'* 1914, *p.* 601).—**F. Amenta** records a fatal case in a girl, aged 22 months, following broncho-pneumonia. The necropsy showed sclerosis of the left upper lobe, fibrinous pleurisy on the left and purulent on the right, and pericarditis. J. D. Rolleston.

Two cases of apnœa in infants (*'Med. Journ. of Austr.,'* 1914, i, *p.* 446).—**W. F. Litchfield** lost two cases of children, aged 5 weeks and 4 days old, from attacks of apnœa and cyanosis. Artificial respiration proved unavailing. F. R. B. Atkinson.

Otology, Rhinology and Laryngology.

The conservation of hearing (*'Cleveland Med. Journ.,'* 1914, xiii, *p.* 622).—**G. Wishard**.—A useful paper, pleading for the better treatment of ear conditions in young children. He insists that acute tubo-tympanic catarrh is the beginning of most middle-ear disease, and better care of the throats of children suffering from the ordinary infectious diseases is needed. A strong case is put forward for prevention. Macleod Yearsley.

Otology in relation to infectious fevers, public health, and education (*'Edin. Med. Journ.,'* 1914, ii, *p.* 81).—**J. S. Fraser** reviews some of the more important methods of prevention and treatment of deafness in school children. In the author's opinion, if ear disease were treated at fever hospitals and school clinics much unnecessary deafness, not only in children but also in adults, would be avoided, and the large mortality due to the intra-cranial complications of middle-ear suppuration greatly reduced. J. Allan.

Report of a case of otitic meningitis due to the Streptococcus capsulatus (*'Arch. of Ped.,'* 1914, xxxi, *p.* 766).—**C. Johnstone Imperatori.**—Boy, aged 7 years. Left otorrhœa at age of 9 months, recovered in four weeks. At age of $3\frac{1}{2}$ years, tonsils and adenoids removed. Recurrence of otorrhœa following year, when tonsil and adenoid operation was repeated. Three years later, acute purulent otitis, double paracentesis, improvement. Next day, signs of early meningitis, lumbar puncture, improved. Three days later double mastoid operation; *left*, dura exposed and healthy, tip and sinus cells necrotic; *right*, mastoid cells necrotic, pus. Two days later, lumbar puncture, exploration of left middle cranial fossa, drainage of cisterna magna. Death fifty hours later; no autopsy. Macleod Yearsley.

Two cases of otitic extra-dural abscess (*'Edinb. Med. Journ.,'* 1915, i, *p.* 68).—**J. S. Fraser** gives in detail the clinical histories of two cases (boys, aged 7 and 9 years respectively) of extra-dural abscess, which is the commonest of the intra-cranial complications following suppurative otitis media. In one case the symptoms closely resembled those of septic thrombosis of the sigmoid sinus, and in the other those of basal leptomeningitis.

Very frequently the condition is not diagnosed before operation, but symptoms suggestive of the condition are: (1) Localised headache; (2) fever; (3) localised tenderness, especially over the posterior border of the mastoid process. The presence of fever is important, as mastoiditis alone very seldom gives rise to a temperature of over 100° F. except in very young children, or in cases associated with infectious fevers. In the two cases recorded by the author the radical mastoid operation was done with complete success.

J. Allan.

Parotid fistula following mastoid operation (*'Boston Med. and Surg. Journ.,'* 1915, clxxii, *p.* 25).—**P. Hammond.**—A girl, aged 9 years. Mastoid operation on right ear five years earlier. Persistent watery discharge from the right cheek since. The fistula was at lower end of scar near to the lower angle of jaw. The fistula was easily cured by operation. Another case, in a boy, aged 4 years, is reported by Canesteo in the *'Annals of Otology,'* xxiii, p. 148.

Macleod Yearsley.

Complications of accessory nasal sinus inflammations in scarlet fever (*'Jahrb. f. Kinderheilk.,'* 1914, lxxx, *p.* 536).—**M. Paunz.**—Acute inflammation of a mild degree of the antrum of Highmore or the ethmoid cells is probably common in scarlet fever, and may occur at a very early stage. At operations or autopsies the mucosa is reddened and œdematous, and frequently shows hæmorrhages. There is a serous, muco-purulent or purulent secretion in the cavity, from which streptococci, staphylococci, or pneumococci can be cultivated. As long as no complications occur, the diagnosis of accessory nasal sinus inflammation is usually not made, though its presence may be conjectured by the occurrence of nasal discharge. When complications occur, the diagnosis rests on definite symptoms: (1) Inflammatory œdema of the skin; (2) very marked tenderness; (3) high fever. The œdema always corresponds to the sinus affected, inflammation of the ethmoid cells being indicated by œdema at the internal canthus, while, if the frontal sinus is involved, the œdema spreads over the frontal bone. Inflammation of the sphenoid sinus is rarely seen in scarlet fever, because this sinus is not yet developed in children. Œdema of the lower lid is frequently found as a sign of inflammation of the antrum of Highmore. Later on a periosteal abscess may occur and a bone fistula result. Perforation may take place internally and give rise to serous or purulent meningitis. The prognosis in inflammation of the frontal sinus is usually worse than in inflammation of the maxillary and ethmoid sinuses, but is good if the operation is carried out in time. An illustrative case is recorded in a girl, aged 4 years, who developed inflammation of the left ethmoid cells and frontal sinus in the second week of septic scarlet fever. Complete recovery followed operation.

J. D. Rolleston.

Rhinolith of several years duration in a child, aged 8 years (*'Med. Record,'* lxxxvi, *p.* 673).—**Barnet Joseph.**—The chief symptom (as usual) was unilateral nasal discharge. The cause was apparently a fall on the face five years earlier, followed by profuse epistaxis lasting half an hour. The rhinolith consisted of undefinable detritus, calcium phosphate, carbonate, and hemosiderin. As the latter is found only in old, decomposed blood-masses, it suggests that the nucleus was a blood clot.

Macleod Yearsley.

Relation of the tonsils, adenoids, and other throat conditions to tuberculous cervical adenitis (*'Boston Med. and Surg. Journ.,'* 1915,

CLXXII, *p.* 1).—**G. L. Richards** discusses the anatomy of the lymphatics in this region and the development of the tonsil. It is not probable that all enlarged lymph glands are tuberculous, presumably about 80 per cent. of them are. MACLEOD YEARSLEY.

Cervical adenitis (*'New York Med. Journ.,'* 1914, C, *p.* 705).—**Stauffer** wishes to present the view of the rhinologist on this disease. He considers cervical adenitis is usually the result of adenoids, hypertrophied tonsils, etc. It is necessary to remove this cause to cure the adenitis. He suggests: (1) Early cleansing of the mouth, nose, and ears. (2) Complete removal of adenoids and tonsils. (3) Early adjustment of irregular teeth, or filling decayed teeth or removal of decayed roots. (4) Early mastoid operation for any purulent otitis media present. (5) Plenty of good food, regular baths, exercise, and plenty of sleep. Plenty of fresh air day and night is necessary to counteract the blocking of the air to the lungs from the adenoids and enlarged tonsils. J. PORTER PARKINSON.

Tonsillotomy versus tonsillectomy (*'New York Med. Journ.,'* 1914, C, *p.* 1097).—**T. R. French.**—A differential diagnosis should be made to determine whether the tonsils are the probable sources of infection or are free from disease. The history and appearances of the glands are often sufficient for this purpose. It is desirable to leave the capsules in the tonsillar fossæ whenever possible, owing to subsequent pharyngeal deformity. It is probably safe to say that at least 80 per cent. of enlarged tonsils do not contain foci of infection, and should be removed only when obstructing voice or respiration. Whenever there is a doubt as to the condition of the tonsils part should be removed and examined under magnification of five to ten diameters in a brilliant light. MACLEOD YEARSLEY.

Teratoma of the pharynx (*'Laryngoscope,'* 1914, XXIV, *p.* 798).—**C. C. Eves.**—A male infant, aged 14 months, was brought to hospital with the history that since he was three weeks old he had been subject to vomiting, after which a finger-like process would protrude from the mouth. On ordinary examination of the throat nothing abnormal was seen, but on making the child retch a smooth, pinkish growth, of the size and shape of the child's little finger, was shot forward, protruding about half an inch beyond the lips. It was attached by a pedicle to the right side of the posterior wall behind the upper end of the posterior pillar, and when not protruded hung down into the œsophagus. It was excised by curved scissors without an anæsthetic. Its covering was formed of skin with fine downy hairs and mucous membrane, and the centre, on section, was found to consist of subcutaneous fat. J. D. ROLLESTON.

Retro-pharyngeal abscess (*'Med. Rec.,'* 1914, LXXXVI, *p.* 1009).—**B. A. Fedde** describes three cases, in a boy, aged 13 months, a girl, aged 3 years, and a boy, aged 7 months, and discusses the anatomy, diagnosis, and treatment. Anæsthesia is dangerous. The author prefers to operate with the patient's head in his lap, turning the child over on its face as the pus wells out. Hilton's external incision is required in some cases.
MACLEOD YEARSLEY.

Retro-pharyngeal abscess, with rupture, asphyxiation, and death, following acute tonsillitis (*'Laryngoscope,'* 1914, XXIV, *p.* 985).—**C. C. Charlton** records a case in a boy, aged 8 years, who died suddenly

from the bursting of a retro-pharyngeal abscess a fortnight after an attack of acute tonsillitis. J. D. Rolleston.

Congenital laryngeal stridor (*'Lancet,'* 1914, II, *p.* 1147).—**J. H. Sheldon** reports a case in a bright, well nourished, male infant, aged 5 months. Health good; no signs of rickets or syphilis. The family history indicated nothing except the occurrence of asthma in the children of an aunt of the patient's father. The chief features of the case were: (1) Stridor present from birth; (2) transverse furrowing of the lower chest wall; (3) certain auscultatory signs; (4) absence of cyanosis; (5) absence of laryngeal excursion; (6) a heart-rate uninfluenced by respiratory movements; and (7) the excellent health of the child. J. Allan.

A case with open safety-pin in the œsophagus (*'Interstate Med. Journ.,'* 1914, XXI, *p.* 1084).—**G. W. Mackenzie.**—A male infant, aged 7 months, was playing with a safety-pin when it suddenly was missed. There were no symptoms, but a skiagram showed it to be lodged in the œsophagus just below the level of the first rib. Under ether six unsuccessful attempts were made to remove it with a 6 mm. Kahler tube and a tenaculum forceps. A skiagram, taken at 9 a.m. the next day, showed the pin in the stomach. The child was then pale, restless, and dyspnœic. Some improvement occurred, but death took place suddenly at 1 p.m. Post mortem a small perforation was found in the left side of the œsophagus, just below the lower border of the left lung, communicating with the left pleural cavity. The lung was collapsed and covered with ropy adhesions.

J. D. Rolleston.

Jackstones impacted in the œsophagus: report of three cases in four days: one death (*'Arch. of Ped.,'* 1914, XXXI, *p.* 610).—**G. M. Coates.**—The cases occurred in children aged 12 months, 17 months, and 24 months respectively. Recovery took place in the first and third cases after removal of the stones, but the second died from suffocation.

F. R. B. Atkinson.

The importance of a very thorough examination in cases of foreign body alleged to have been swallowed or inhaled (*'Lancet,'* 1914, II, *p.* 493).—**E. D. Davis** describes the very interesting case of a girl, aged 7 years, who had swallowed a rabbit bone four months before the consultation. The bone was lodged in the glottis and surrounded by granulation tissue; it was removed by Killian's method. Short accounts of seven other cases are added from the experience of various observers. The author pleads for the use of the bronchoscope and œsophagoscope as far superior to the older forms of instrument. Macleod Yearsley.

Removal of foreign bodies from the œsophagus and lower air passages in children (*'Boston Med. and Surg. Journ.,'* 1914, CLXX, *p.* 517). **D. Crosby Greene** and **F. E. Garland.**—Twenty cases occurring in five years of service in a children's hospital. Of these ten cases were those of foreign body in the œsophagus, three in the larynx, three in the trachea, and four in the bronchi. Only two cases died, one from pulmonary abscess, one from exhaustion. The removal of foreign bodies in these situations in children differs from that in adults in: (1) Anæsthesia—children require a general anæsthetic. (2) The smaller calibre of the air passages necessitates smaller instruments. Macleod Yearsley.

Reviews.

Asthma and its Radical Treatment. By J. Adam, M.A., M.D., F.R.F.P.S.Hamilton. With 4 illustrations. Pp. 184. London: H. Kimpton, 1913. Price 5s. net.

The author of this little book holds firmly to the view that asthma is a toxæmia and not a neurosis, and his experience has shown him, during the last fifteen years, that only the toxæmic hypothesis of the disease can lead to a radically curative treatment. The eleven chapters into which the volume is divided discuss bronchial asthma from various points of view, and incidentally make it plain that, while Dr. Adam has studied the British literature of the disorder and has a gift for speculative pathology, he has also had an extensive practical experience in the treatment of asthma. He marshals all the theoretical evidence he can to prove that in both probability and fact some disturbance of the metabolism, resulting in acute or subacute toxæmia, is the essential factor—though not the only one—in the production of the bronchial spasm that characterises the asthmatic paroxysm. In the earlier pages he quotes with approval Bouchard's work on the toxicity of the urine, arguing that if the urine is toxic, and if it is abnormal in quantity or constituents, after an attack of asthma, then asthma is probably toxæmic in origin. No evidence, however, is brought forward to show that the toxicity of the urine is greater during or after an attack of asthma than it was before, a point that seems essential before the validity of the argument can be accepted. On a later page he quotes the more recent work of Eustis, who believes the toxin that produces asthma to be one of the complex amines resulting from the normal pancreatic digestion of protein. Dr. Adam gets on to firmer ground in his chapters on prognosis and treatment, and these form the most valuable part of his work. The patient's teeth must be set in order so that he may be able to masticate his food; his nose must be thoroughly examined in order that abnormalities—adenoids, polypi, hypertrophic turbinals, for example—may be corrected; and, most important of all, he must live on a rational diet, with three meals a day and a proper amount of work or exercise. In severe cases fasting one day a week, or the consumption of nothing more than buttermilk on Sundays, is recommended. When asthmatic paroxysms occur Dr. Adam recommends that a mixture containing belladonna, potassium iodide, and liquor arsenicalis should be given for a few weeks; the iodide, he says, is a "great help to tissue metabolism and in combating toxæmia." The book may be recommended to all medical practitioners who have to treat patients with this chronic and rebellious complaint. It is clearly written, optimistic, and full of valuable practical suggestions. A. J. J.-B.

Transactions of the National Association for the Prevention of Consumption and other Forms of Tuberculosis. London: Adlard and Son, 1914. Price 5s. post free.

The sixth annual conference was held in Leeds in July of last year. The three subjects for discussion were: "The House in Relationship to Tuberculosis," "Domiciliary Treatment," and "Tuberculosis, especially Surgical, in Childhood." The opening address was delivered by Sir Wm. Younger, who drew attention to the fact that the highest death-rate was to be found in districts which had the largest number of one- and two-room houses, and where, as in Edinburgh, the insanitary and densely populated areas were cleared, the

death-rate from the disease fell from 3·8 to 0·4 per 1000, and the general death-rate from 45 to 15 per 1000. Sir Robert Philip continued the discussion, and pointed out the frequency with which tuberculosis appeared in different families originally healthy occupying successively the same dwelling. He considered that a certificate should be issued by the local authority in the case of every house offered for habitation, and no house should be occupied which did not obtain such a licence. Dr. Cameron noted that as a rule the percentage of phthisis deaths to deaths from all causes is highest where the general death-rate and density of population are also highest; also that the over-crowding of houses shows a more direct connection with the general death-rate than it does with the phthisis death-rate. Colonel Kyffin-Taylor drew attention to the condition of houses at Liverpool, and noted that closing and demolition of houses without re-housing caused an increase of sickness, as it necessitated over-crowding in other parts, but when sanitary houses were built in place of those destroyed the mortality of phthisis decreased from 4 to 1·9 per 1000.

Dr. Knaggs opened the discussion on "Tuberculosis in Childhood," and stated that in bone and joint cases in Edinburgh up to the age of eight years, bovine infections were twice as numerous as human infections. Dr. Gauvain recommended the establishment of hospitals far from towns devoted to the use of surgical tuberculous cases containing 1000 beds for children. Dr. Vining recommended in cases of discharging sinus the use of a lotion of 4 per cent. of sodium chloride and ·5 of sodium citrate. Dr. Watson pleaded for more open-air schools, the avoidance of kissing the baby, a good milk supply, and boiling the milk. The general treatment of these cases was dwelt upon by various speakers. Mention during the discussion was also made of Dr. Mitchell's investigations into the cause of enlarged tuberculous glands (See Brit. Journ. Child. Dis., 1915, xii, pp. 115 and 117). Dr. Raw has found that children attacked with surgical tuberculosis were to a great extent protected in after life against consumption, and those primarily attacked with the latter were immune from the former. He stated that buttermilk was especially liable to be infected with the bacillus, and he found that margarine was much less infected with tubercle than butter. He also advised that all milk should be boiled and all tuberculous cows destroyed. Alderman Shelmerdine described his experiments with the electrical treatment of milk.

Sir W. Osler opened the discussion on "Domiciliary Treatment," which was continued by Dr. Woodcock, who did not consider milk the greatest danger in the production of tuberculosis, but the presence of overcrowding and polluted dust and air. Various speakers considered the treatment of the consumptive person at home, as well as the sanitary condition of the house, and Dr. Campbell considered the best solution of the difficulty was to provide cottages in the outskirts of the towns with sufficient ground around to provide work in the open for those unable to undertake ordinary employment. Dr. Vallow read an interesting paper on an analysis of different methods of treatment of tuberculous people, comparing tuberculin treatment with or without sanatorium treatment, "emulsion" cases with or without sanatorium and hospital treatment, and treatment of school-children with or without sanatorium treatment, and with or without tuberculin treatment, a paper well worth reading. Most of the papers are deserving of study, and we can recommend the 'Transactions' to all who are, and all ought to be, interested in the subject.

F. R. B. Atkinson.